Geophysical Research Abstracts
Vol. 19, EGU2017-8309-1, 2017
EGU General Assembly 2017
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Latest Pleistocene flash floods in the Dead Sea basin inferred from the ICDP core

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Flash floods associated with intense rainstorms occur regularly in the Dead Sea catchment. Their association with the long-term climate trend is the major goal of a Palestinian, Israeli, and German trilateral project (DFG priority program 1006 ICDP, PALEX - Paleoclimate in the Eastern Mediterranean Region - Levant: Paleohydrology and Extreme Floods from the Dead Sea ICDP core). Collaborating geoscientists, hydrologists, and atmospheric scientists aim at understanding of extreme flood events in the eastern Mediterranean.
The ICDP Dead Sea Deep Drilling Project (DSDDP) recovered a ∼455 m long core (5017-1) from the northern Dead Sea basin. Detrital layers of flash flood deposits revealed flood frequency changes during the late Holocene (Neugebauer et al. 2015). Here, we present microfacies and μ-XRF data recording flash floods during the Pleistocene/Holocene transition (∼15-11 cal ka BP) characterized by a major lake level drop of about 180 m (Torfstein et al. 2013) associated with massive gypsum precipitation (Torfstein et al. 2008; Neugebauer et al. 2014). First results show that flash floods are preserved as discrete graded or homogeneous detrital layers in regularly laminated sediments. Lacustrine turbidites with a basal sublayer of primary gypsum indicate reworking of proximal sediments due to rapid lake level changes or overturns of the water column. We established a high-resolution time series of detrital event layers on the basis of a previously established radiocarbon chronology (Neugebauer et al. 2014) and discuss frequency and magnitude of flash floods during the transition from a glacial to interglacial climate mode.

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